



Billing Code 4310-55

## **DEPARTMENT OF THE INTERIOR**

### **Fish and Wildlife Service**

#### **50 CFR Part 17**

**Docket No. FWS-R2-ES-2013-0083**

**4500030113**

**RIN 1018-AY55**

### **Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Sharpnose Shiner and Smalleye Shiner**

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Final rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service, determine endangered species status under the Endangered Species Act of 1973, as amended, for the sharpnose shiner

(*Notropis oxyrhynchus*) and smalleye shiner (*N. buccula*), two fish species from Texas. The effect of this regulation will be to add these species to the List of Endangered and Threatened Wildlife. We have also determined that critical habitat for the sharpnose shiner and smalleye shiner is prudent and determinable. Elsewhere in today's **Federal Register**, we designate critical habitat for the sharpnose shiner and smalleye shiner under the Act.

**DATES:** This rule becomes effective [**INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**].

**ADDRESSES:** This final rule is available on the Internet at <http://www.regulations.gov> and at <http://www.fws.gov/southwest/es/ArlingtonTexas>. Comments and materials received, as well as supporting documentation used in the preparation of this rule, are available for public inspection at <http://www.regulations.gov>. All of the comments, materials, and documentation that we considered in this rulemaking are available for public inspection, by appointment, during normal business hours at: U.S. Fish and Wildlife Service, Arlington, Texas, Ecological Services Field Office, 2005 NE Green Oaks Blvd., Suite 140, Arlington, TX 76006; by telephone 817-277-1100; or by facsimile 817-277-1129.

**FOR FURTHER INFORMATION CONTACT:** Debra Bills, Field Supervisor, Arlington, Texas, Ecological Services Field Office, (see **ADDRESSES**). If you use a

telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

## **SUPPLEMENTARY INFORMATION:**

### **Executive Summary**

*Why we need to publish a rule.* Under the Endangered Species Act (Act), a species or subspecies may warrant protection through listing if it is endangered or threatened throughout all or a significant portion of its range. Listing a species as an endangered or threatened species can only be completed by issuing a rule. On August 6, 2013 (78 FR 47582; 78 FR 47612), we proposed to list the sharpnose shiner and smalleye shiner as endangered species and proposed to designate critical habitat under the Act. Elsewhere in today's **Federal Register**, we finalize designation of critical habitat for the sharpnose shiner and smalleye shiner under the Act.

*This rule will* finalize the listing of the sharpnose shiner and smalleye shiner as endangered species.

*The basis for our action.* Under the Act, a species may be determined to be an endangered or threatened species based on any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B)

overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; and (E) other natural or manmade factors affecting its continued existence. We have determined that the sharpnose and smalleye shiners meet the definition of an endangered species primarily because of the present or threatened destruction, modification, or curtailment of its habitat or range resulting mainly from impoundments and alterations of natural stream flow.

*Peer review and public comment.* We sought comments from independent specialists to ensure that our designation is based on scientifically sound data, assumptions, and analyses. We invited these peer reviewers to comment on our listing proposal. We also considered all comments and information received during the public comment period.

### **Previous Federal Actions**

On June 13, 2002 (67 FR 40657), the sharpnose shiner and smalleye shiner were made candidates for listing under the Act. On May 11, 2004, we received a petition to list the sharpnose shiner and smalleye shiner. We published our petition finding on May 11, 2005 (70 FR 24899). Because the sharpnose shiner and smalleye shiner were previously identified through our candidate assessment process, the species had already received the equivalent of a substantial 90-day finding and a warranted, but precluded, 12-month finding (67 FR 40657, June 13, 2002). Through the annual candidate review

process (69 FR 24876, May 4, 2004; 70 FR 24870, May 11, 2005; 71 FR 53756, September 12, 2006; 72 FR 69034, December 6, 2007; 73 FR 75176, December 10, 2008; 74 FR 57804, November 9, 2009; 75 FR 69222, November 10, 2010; 76 FR 66370, October 26, 2011; 77 FR 69994, November 21, 2012), the U.S. Fish and Wildlife Service (Service) continued to solicit information from the public regarding these species.

On August 6, 2013 (78 FR 47582; 78 FR 47612), we proposed to list the sharpnose shiner and smalleye shiner under the Act as endangered species and proposed to designate critical habitat. We held a public hearing on September 4, 2013, in Abilene, Texas. On March 4, 2014 (79 FR 12138), we requested comments on the draft economic analysis of critical habitat designation for the shiners, as well as the proposed rule to designate critical habitat. This comment period closed on April 3, 2014 (79 FR 12138).

## **Background**

### *Species Information*

The April 2014 Species Status Assessment Report (SSA Report) (Service 2014, entire), available online at [www.regulations.gov](http://www.regulations.gov) under Docket Number FWS–R2–ES–2013–0083, provides a thorough assessment of sharpnose shiner and smalleye shiner biology and natural history, and assesses demographic risks, threats, and limiting factors in the context of determining viability and risk of extinction for the species. The SSA

Report has been updated since the August 6, 2013, publication of the proposed rules with data received during the peer review and public comment processes. In the SSA Report, we compile biological data and a description of past, present, and likely future threats (causes and effects) facing the sharpnose shiner and smalleye shiner. Because data in these areas of science are limited, some uncertainties are associated with this assessment. Where we have substantial uncertainty, we have attempted to make our necessary assumptions explicit in the SSA Report. We base our assumptions in these areas on the best available scientific and commercial data. Importantly, the SSA Report does not represent a decision by the Service on whether these taxa should be listed as endangered or threatened species under the Act. The SSA Report does, however, provide the scientific basis that informs our decisions (see *Summary of Biological Status and Threats* in this final rule), which involve the further application of standards within the Act and its regulations and policies (see **Determination**) in this final rule).

#### *Summary of Biological Status and Threats*

Our SSA Report documents the results of the comprehensive biological status review for the sharpnose and smalleye shiners and provides a thorough account of the species' overall viability and, conversely, extinction risk (Service 2014, entire). The SSA Report contains the data on which this final rule is based. The following is a summary of the results and conclusions from the SSA Report.

The sharpnose shiner and smalleye shiner are small minnows native to arid prairie streams of Texas originating from the Brazos River. The naturally occurring historical distribution of the sharpnose shiner included the Brazos River, Colorado River, and Wichita River in Texas, while the naturally occurring historical distribution of the smalleye shiner included only the Brazos River.

In conducting our status assessment, we first considered what the two shiners need to ensure viability. We generally define viability as the ability of the species to persist over the long term and, conversely, to avoid extinction. We then evaluated whether those needs currently exist and the repercussions to the species when those needs are missing, diminished, or inaccessible. We next considered the factors that are causing the species to lack what they need, including historical, current, and future factors. Finally, considering the information reviewed, we evaluated the current status and future viability of the species in terms of resiliency, redundancy, and representation.

Resiliency is the ability of a species to withstand stochastic events and, in the case of the shiners, is best measured by the extent of suitable habitat in terms of stream length. Redundancy is the ability of a species to withstand catastrophic events by spreading the risk and can be measured through the duplication and distribution of resilient populations across the species' range. Representation is the ability of a species to adapt to changing environmental conditions and can be measured by the breadth of genetic diversity within and among populations and the ecological diversity of populations across the species'

range. In the case of the shiners, we evaluate representation based on the extent of the geographical range and the variability of habitat characteristics within their range as indicators of genetic and ecological diversity.

Our assessment found that both species of shiners have an overall low viability (or low probability of persistence) in the near term (over about the next 10 years) and a decreasing viability (increasing risk of extinction) in the long-term future (over the next 11 to 50 years). For the shiners to be considered viable, individual fish need specific vital resources for survival and completion of their life cycles. Both species need wide, shallow, flowing waters generally less than 0.5 meters (m) (1.6 feet (ft)) deep with sandy substrates, which are found in mainstem rivers in the arid prairie region of Texas. Both species broadcast-spawn eggs and sperm into open water asynchronously (fish not spawning at the same time) during periods of low flow and synchronously (many fish spawning at the same time) during periods of elevated streamflow from April through September. Their eggs are semi-buoyant and remain suspended 1 or 2 days in flowing water as they develop into larvae. Larval fish remain suspended in the flowing water column an additional 2 to 3 days as they develop into free-swimming juvenile fish. In the absence of sufficient water velocities, suspended eggs and larvae sink into the substrate where a majority likely dies. The reproductive strategy of these species makes them particularly vulnerable to changes in the natural conditions of occupied habitat.



To sustain populations of the shiners long term, population dynamics modeling suggests estimated mean spawning season river flows of 2.61 cubic meters per second ( $\text{m}^3\text{s}^{-1}$ ) (92 cubic feet per second (cfs)) and 6.43  $\text{m}^3\text{s}^{-1}$  (227 cfs) are required for the sharpnose and smalleye shiners, respectively. It is also estimated that populations of shiners require approximately 275 kilometers (km) (171 miles (mi)) of unobstructed, flowing water during the breeding season to support a successfully reproductive population. This length of stream allows the eggs and larvae to remain suspended in the water column and survive until they mature sufficiently to swim on their own. Across their range, these species also need unobstructed river lengths to allow for upstream and downstream movements to survive seasons with poor environmental conditions in certain river reaches. Unobstructed river reaches allow some fish to survive and recolonize degraded reaches when conditions improve. In addition, these fish only naturally live for 1 or 2 years, making the populations particularly vulnerable when the necessary streamflow conditions for reproduction are lacking for more than one season.

The current conditions of both species indicate that they do not have the necessary resources for persistence in the immediate future. Both species have experienced range reduction, with both fish having lost at least half of their historical range. Both species are now restricted to one population in the upper Brazos River basin. As a result, sharpnose and smalleye shiners currently lack redundancy, which is reducing the viability of these species as a whole. In addition, streamflows within their current extant range are insufficient during some years to support successful reproduction, such as occurred in

2011. These fish have been resilient to past stressors that occur over short durations, and their populations appear capable of recovering naturally even when an entire year's reproductive effort is lost. However, without human intervention, given their short lifespan and restricted range, stressors that persist for two or more reproductive seasons (such as a severe drought) severely limit these species' current viability, placing them at a high risk of extinction now.

The two primary factors affecting the current and future conditions of these shiners are river fragmentation by impoundments and alterations of the natural streamflow regime (by impoundments, drought, groundwater withdrawal, and saltcedar encroachment) within their range. Other secondary factors, such as water quality degradation and commercial harvesting for fish bait, likely also impact these species but to a lesser degree. These multiple factors are not acting independently, but are acting together as different sources (or causes), which can result in cumulative effects to lower the overall viability of the species.

Fish barriers such as impoundments are currently restricting the upstream and downstream movement of migrating fish and prevent survival of the semi-buoyant eggs and larvae of sharpnose and smalleye shiners. This is because the eggs and larvae cannot remain suspended in the water column under non-flowing conditions in reservoirs or if streamflows cease. Of the area once occupied by one or both species in the Brazos, Colorado, and Wichita Rivers, only two contiguous river segments remain with

unobstructed lengths (without dams) greater than 275 km (171 mi): the upper Brazos River (where the fish are extant) and the lower Brazos River (where the fish are either extirpated or functionally extirpated). The effects of river habitat fragmentation have occurred and continue to occur throughout the range of both species and are expected to increase if proposed new reservoirs are constructed. River habitat fragmentation is affecting both species at the individual, population, and species levels, and puts the species at a high risk of extinction currently and increasingly so into the long-term future.

The historical ranges of both species have been severely fragmented, primarily by large reservoir impoundments, resulting in the isolation of one population of each species in the upper Brazos River basin. The construction of Possum Kingdom Reservoir in 1941, for example, eliminated the ability of these species to migrate downstream to wetter areas when the upper Brazos River experiences drought. There are also a number of existing in-channel structures (primarily pipeline crossings and low-water crossings) within the occupied range of these species, some of which are known to restrict fish passage during periods of low flow. Species extirpation has already occurred in areas where river segments have been fragmented and reduced to less than 275 km (171 mi) in length.

In addition, future fragmentation of the remaining occupied habitat of the upper Brazos River by new impoundments would decrease the contiguous, unfragmented river habitat required by these species for successful reproduction and impact the sole

remaining population of each of these species. Texas does not have adequate water supplies to meet current or projected water demand in the upper Brazos River region, and additional reservoir construction is considered imminent. Possible new impoundments include the 2012 State Water Plan's proposed Post Reservoir in Garza County, the Double Mountain Fork Reservoir (East and West) in Stonewall County, and the South Bend Reservoir in Young County. Because extirpation of these species is expected to eventually occur in occupied river fragments reduced to less than 275 km (171 miles) in length, any new structures further fragmenting stream habitats increases the likelihood of extinction for both species.

The natural flow regime is considered one of the most important factors to which native riverine species, like the shiners, become adapted, and alterations to it can have severe impacts on fishes. A majority of sharpnose and smalleye shiner reproductive output occurs through synchronized spawning during periods of elevated pulse flows associated with storms, although successful reproduction is also possible during periods of low to moderate flow. When streamflows are insufficient, the fish cannot successfully spawn and reproduce. There are several environmental changes that are a source of declining streamflows within the range of the shiners. Downstream of reservoirs, streamflows are lowered and stabilized, which has reduced or, in some areas, eliminated successful reproduction in these species. In addition, groundwater withdrawal and depletion will reduce or eliminate the remaining springs and seeps of the upper Brazos River basin, which will lower river flow. Drought is another obvious source of impact

that negatively affects streamflow and has severe impacts on sharpnose and smallmouth shiner reproduction. Severe droughts in this region are expected to become more common as a result of ongoing climate change. Finally, saltcedar encroachment is another source of environmental change that not only is affecting streamflows but also restricts channel width and increases channel depth. These stream channel changes reduce the amount of wide channels and shallow waters preferred by sharpnose and smallmouth shiners. Reduced streamflow leading to river pooling also affects the survival of adult and juvenile fishes because water quality parameters such as salinity, dissolved oxygen, and temperature may approach or exceed those tolerated by these species and food availability becomes limited. Flow reduction and an altered flow regime have occurred and continue to occur throughout the range of these species and are expected to impact both species at the individual, population, and species levels.

Within the reduced range of these species in the upper Brazos River basin, there are currently at least 13 impoundments or other structures (e.g., pipelines and low water crossings) affecting (to varying degrees) the amount of stream flow within the occupied range of these species. Upstream reservoirs serve as water supplies for various consumptive water uses and reduce downstream flows available for the fishes. Because the current impoundments restrict stream flow below the minimum levels required for both species, we expect these impoundments to impact both species at the individual, population, and species levels.

Additional future impoundments, reservoir augmentations, and water diversions are under consideration for construction within the upper Brazos River basin, which would further reduce flows and fragment remaining habitat. The construction of at least some of these structures to meet future water demand in the region is likely to occur within the next 50 years. These future impoundments, reservoir augmentations, and water diversions will further increase the likelihood of extinction for both species.

Besides impoundments and diversions of water from reservoirs, there are other sources causing reduced stream flows in the upper Brazos River basin. One such source is the projected warmer temperatures and drier conditions in the upper Brazos River basin in the future. This trend is already becoming apparent and exacerbates the risk of the species' extinction from loss of river flow. River flow reductions and river drying are also expected to increase as groundwater withdrawals negatively impact already reduced spring flows. Saltcedar encroachment also intensifies evaporative water loss along occupied river segments. There are several existing efforts addressing threats to natural flow regimes, including the Texas Environmental Flows Program, saltcedar control programs, and groundwater conservation districts. However, these programs and conservation efforts have not alleviated ongoing and future threats negatively affecting water flow in the upper Brazos River basin.

The effects of reduced stream flows on the shiners were dramatically demonstrated during the summer spawning season of 2011. During 2011, Texas

experienced the worst 1-year drought on record, and the upper Brazos River went dry. Some individual fish presumably found refuge from the drying river in Possum Kingdom Lake downstream. However, the non-flowing conditions in the river made reproduction impossible, and any shiners in the lake would have faced increased predation pressure from large, lake-adapted, piscivorous fish. Fearing possible extinction of these species, State fishery and Texas Tech University biologists captured sharpnose and smalleye shiners from isolated pools in 2011, prior to their complete drying, and maintained a small population in captivity until they were released back into the lower Brazos River the following year. During the 2011 drought, no sharpnose shiner or smalleye shiner reproduction was documented. Given their short lifespan (they rarely survive through two reproductive seasons, and most typically survive long enough to reproduce only once); a similar drought in 2012 would have likely led to extinction of both species. However, 2012 fish survey results of the upper Brazos River basin indicated drought conditions were not as intense as those in 2011, and successful recruitment of sharpnose and smalleye shiners occurred.

As remaining habitat of the shiners becomes more fragmented and drought conditions intensify, the single remaining population of sharpnose shiners and smalleye shiners will become more geographically restricted, further reducing the viability of the species into the future. Under these conditions, the severity of secondary threats, such as water quality degradation from pollution and golden algal blooms, and legally permitted commercial bait fish harvesting, will have a larger impact on the species and a single

pollutant discharge, golden algal bloom, or commercial harvesting or other local event will increase the risk of extinction of both species.

The shiners currently have limited viability and increased vulnerability to extinction largely because of their stringent life-history requirement of long, wide, flowing rivers to complete their reproductive cycle. With a short lifespan allowing only one or two breeding seasons and the need for unobstructed river reaches greater than 275 km (171 mi) in length containing average flows greater than  $2.61 \text{ m}^3\text{s}^{-1}$  (92 cfs) and  $6.43 \text{ m}^3\text{s}^{-1}$  (227 cfs) (for the sharpnose and smalleye shiners, respectively) during the summer, both species are at a high risk of extirpation when rivers are fragmented by fish barriers and flows are reduced from human use and drought-enhanced water shortages. These adverse conditions have already resulted in substantial range reduction and isolation of the one remaining population of both fish into the upper Brazos River basin. The extant population of each shiner species is of adequate size, is located in a contiguous stretch of river long enough to support reproduction, and is generally considered resilient to local or short-term environmental changes. However, with only one location, the species lack any redundancy. Further, these species lack representation, meaning they lack the ability to adapt to changing environmental conditions in a timeframe that would avoid extinction.

Given the short lifespan and restricted range of these species, without human intervention, lack of adequate flows (due to drought and other stressors) persisting for



two or more consecutive reproductive seasons would likely lead to the species' extinction. With human water use and ongoing regional drought, the probability of this happening in the near term (about the next 10 years) is high, putting the species at a high risk of extinction. Over the longer term (the next 11 to 50 years), these conditions will only continue to deteriorate as human water use continues, construction of new dams within the extant range is possible, and ongoing climate change exacerbates the likelihood of drought. In conclusion, both species currently experience low viability (low probability of persistence), and their viability is expected to continue to decline into the future.

### **Summary of Comments and Recommendations**

In the proposed rule published on August 6, 2013 (78 FR 47582), we requested that all interested parties submit written comments on the proposal by October 7, 2013. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. Newspaper notices inviting general public comment were published in the Lubbock Avalanche, Abilene Reporter News, Waco Tribune Herald, and Baylor County Banner. We received requests for a public hearing and held one on September 4, 2013, in Abilene, TX.

During the comment period for the proposed rule, we received 268 comment letters, including 3 peer review comment letters, addressing the proposed listing of sharpnose shiner and smalleye shiner. During the September 4, 2013, public hearing, nine individuals or organizations made comments on the proposed rule. Comments addressing the proposed critical habitat designation were fully addressed in a separate rulemaking action, and published elsewhere in the **Federal Register** today. All substantive information provided during the comment periods has either been incorporated directly into this final determination, the SSA Report, or addressed below.

#### *Comment from Peer Reviewers*

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinion from four knowledgeable individuals with scientific expertise that included familiarity with sharpnose and smalleye shiners or their habitats, biological needs, threats, general fish biology, or aquatic ecology. We received responses from three of the peer reviewers.

We reviewed all comments received from the peer reviewers for substantive issues and new information regarding the listing of sharpnose shiners and smalleye shiners. The peer reviewers generally concurred with our methods and our assessment of the current status of these species. They provided additional information, clarifications, and suggestions to improve the SSA Report. Peer reviewer comments were all specific to

the SSA Report and are incorporated into the SSA Report or responded to in Appendix B of the SSA Report.

*Comments from Federal Agencies*

*(1) Comment:* The U.S. Department of Agriculture's Natural Resources Conservation Service works with landowners on a voluntary basis to apply conservation measures, some of which may benefit sharpnose and smalleye shiners, and the Natural Resources Conservation Service welcomes the opportunity to consult with the Service to determine the effects of their actions on the habitat of these two species.

*Our Response:* The Service appreciates the work of the Natural Resources Conservation Service and looks forward to working with them as conservation partners regarding sharpnose and smalleye shiner habitat.

*Comments from the State*

*(2) Comment:* The term "groundwater withdrawal" is too broad and should be replaced with "depletion of shallow, groundwater flows in the Brazos River alluvium" because there is no verifiable data linking the use of the area's aquifers to reduced flow in the Brazos River. More data are needed on the role of groundwater in this region and its effect on the shiners.

*Our Response:* The Service considers the use of the term “groundwater withdrawal” to adequately capture the evidence provided in the SSA Report and covers both depletion of shallow groundwater flows of the alluvium as well as the removal of groundwater from deeper within the aquifers. We agree more data would be helpful in understanding the interaction between groundwater and surface water flows in the upper Brazos River basin; however, we used the best scientific and commercial data available to determine the effects of groundwater withdrawal on surface water flows and we will continue to investigate the effects of groundwater withdrawal on these species as additional data become available.

*(3) Comment:* The Service lists several threats to sharpnose and smallmouth shiners but does not specifically acknowledge that farming and ranching activities are not threats. It should be explicitly stated that farming and ranching activities have been shown to have no detrimental impact on these species.

*Our Response:* In the SSA Report, we identified sources of current threats and threats likely to occur now or in the immediate future based on the best scientific and commercial data available. These threats do not include ranching or farming. Our intent is only to identify activities that likely pose a threat to these species now or in the immediate future. At this time, the best scientific and commercial data available does not indicate that cattle grazing or current farming practices impact these species. However,

beyond the immediate future, it is conceivable that large-scale farming or ranching activities could substantially reduce surface water flows in the upper Brazos River basin by extensive groundwater withdrawal or removal of surface water flows.

*(4) Comment:* Listing the sharpnose and smalleye shiner could affect economic growth in the Brazos River basin or could limit the development of needed water supplies and require management changes of existing water supplies in important economic centers.

*Our Response:* For listing actions, the Act requires that we make determinations “solely on the basis of the best available scientific and commercial data available” (16 U.S.C. 1533(b)(1)(A)). Therefore, we do not consider any potential information concerning economic or other possible impacts when making listing determinations. We will work with entities to conserve the shiners and develop workable solutions.

*(5) Comment:* More scientific data are needed regarding the status of the shiners and their habitat in the upper Brazos River basin. The species are surviving downstream of the upper segment of the Brazos River; drought is the most obvious factor impacting these minnows, and it does not make good sense to recreate an artificial environment for species unable to adapt to it. A decision of this magnitude that could affect vital water supplies and the economic future of communities should not be based on uncertainty.

*Our Response:* Imperiled species often lack an abundance of scientific data; however, the biological and habitat requirements of the sharpnose and smalleye shiners have been well studied for many years. Further, section 4 of the Act requires the Service to base its decision to list species as either threatened or endangered based solely on the best scientific and commercially available data. We interpret the “best available” standard to mean we are required to use the best scientific and commercial data available to us even though it may be limited or uncertain.

The sharpnose and smalleye shiner are currently limited to the upper Brazos River basin and are extirpated or functionally extirpated from the lower Brazos River area. The sole remaining populations of these species occur in the upper Brazos River basin. While the Service agrees drought is an important factor affecting the viability of these fish, drought is exacerbated by the impoundment of their natural habitat, which further reduces water flows and impedes fish migration to more suitable habitat during dry conditions. We are unclear as to what artificial environment the commenter is referring. However, we are not recreating an artificial environment. We are attempting to conserve a healthy, natural aquatic ecosystem in the upper Brazos River basin is important protect habitat for sharpnose and smalleye shiners and other aquatic wildlife.

We sought comments from independent peer reviewers to ensure that our determination is based on scientifically sound data, assumptions, and analysis. We solicited information from the general public, non-governmental conservation

organizations, State and Federal agencies that are familiar with the species and their habitats, academic institutions, and groups and individuals that might have information that would contribute to an update of our knowledge of the species, as well as the activities and natural processes that might be contributing to the decline of either species. While some uncertainty will always exist, the existing body of literature on sharpnose shiners, smalleye shiners, and similar broadcast-spawning minnows is the best available information. See the SSA Report for more detailed information about these species.

*(6) Comment:* A scientifically based approach including input from affected stakeholders is under way to develop the necessary flows to balance the needs of all users in the Brazos River basin. The listing of these shiners could undermine this effort.

*Our Response:* The Service is aware of the Texas Environmental Flows Program, a scientifically- based approach currently being developed per Senate Bill 3 of the 2007 Texas Legislature. The Service considered this information in section “**6.B. Minimize Impacts from Impoundments**” of the SSA Report. The Service has concluded that the listing of these species does not undermine the Texas Environmental Flows Program. The Service looks forward to working with the State to promote ecologically sustainable water use and to provide information regarding impacts to fish and wildlife resources from environmental flow recommendations when available and applicable.

*(7) Comment:* The Service should discuss on-the-ground work for saltcedar (*Tamarix* spp.) control with the appropriate agencies.

*Our Response:* The Service has been engaged with several organizations involved in saltcedar control projects including the U.S. Department of Agriculture's Natural Resources Conservation Service, The Brazos River Authority, and our internal Partners for Fish and Wildlife program. We look forward to continuing to work with these and additional conservation partners in controlling saltcedar in the upper Brazos River basin. Despite ongoing saltcedar control efforts, these invasive plants continue to thrive in parts of the upper Brazos River basin.

#### *Public Comments*

*(8) Comment:* A number of public comments opposed the listing of the sharpnose shiner and smalleye shiner as federally endangered or threatened species but provided no substantive scientific or commercial evidence suggesting that listing is not warranted.

*Our Response:* While we appreciate the opinion of all interested parties, the Service must base its decision of whether to list the sharpnose shiner and smalleye shiner solely on the basis of the best scientific and commercial data available.



*(9) Comment:* Several comments opposed the involvement of the Federal Government in Texas' affairs or claimed the Texas Parks and Wildlife Department could handle protection of the sharpnose shiner and smalleye shiner.

*Our Response:* While the Texas Parks and Wildlife Department is a valued partner in conserving imperiled species, they do not currently list the sharpnose or smalleye shiners as endangered species, nor does Texas' endangered species law protect the habitat on which these species rely. Consequently, the threats to these species are not completely ameliorated by current Texas actions or laws. The Service looks forward to working with our State partners in the protection and conservation of these species.

*(10) Comment:* Efforts to contain the naturally occurring salt springs along the Salt Fork of the Brazos River would enhance water quality during low flow conditions and would help mitigate the threat from golden algae blooms.

*Our Response:* This is an issue that would be considered during the recovery process.

*(11) Comment:* Listing the sharpnose and smalleye shiners as endangered is inappropriate because there is neither a shortage of their habitat nor populations.

*Our Response:* The sharpnose shiner was known historically and naturally to inhabit approximately 3,417 km (2,123 mi) of river segments in the Brazos, Red, and Colorado River basins, but now the only sustainable population is restricted to approximately 1,009 km (627 mi) of the upper Brazos River basin, a greater than 70 percent reduction. The smalleye shiner was known historically and naturally to inhabit approximately 2,067 km (1,284 mi) of river segments in the Brazos River basin, but now the only sustainable population is restricted to approximately 1,009 km (627 mi) of the upper Brazos River basin, a greater than 51 percent reduction. These are the sole remaining populations of these species. A more detailed description of the species' current and historical ranges is in section “**2.D. Species Rangewide Needs**” of the SSA Report. The two primary factors affecting the current and future conditions of these shiners are river fragmentation by impoundments and alterations of the natural streamflow regime (by impoundments, drought, groundwater withdrawal, and saltcedar encroachment) within their range. Other secondary factors, such as water quality degradation and commercial harvesting for fish bait, likely also impact these species but to a lesser degree. These multiple factors are not acting independently, but are acting together as different sources (or causes), which can result in cumulative effects to lower the overall viability of the species.

*(12) Comment:* Sharpnose and smalleye shiners are sold as bait along the Brazos River in Texas, but there are laws in place that severely limit commercial harvesting of

bait fish now and in the future. However, sharpnose and smalleye shiners are sold as bait along the Brazos River.

*Our Response:* Texas law requires commercial bait harvesters to obtain a State permit before taking nongame fish, such as the shiners, from public fresh waters of the State (Texas Administrative Code Title 31, Part 2, Chapter 57). We are aware of at least one existing State permit that provides for commercial bait harvesting in the upper Brazos River basin, where both sharpnose and smalleye shiners are known to occur. At this time, the permits issued under Texas State law do not require identification of fish collected for commercial bait at the species level, do not put limits on the number of fish collected, and do not prohibit the collection of sharpnose and smalleye shiners. Consequently, commercial bait harvesting remains a threat despite the Texas permitting system. Furthermore, upon effectiveness of this rule, the "take" (as defined by Federal law) of either species will be considered a violation of the Act, regardless of the effect of the permits issued by the State of Texas.

*(13) Comment:* River fragmentation by impoundments and alterations of natural stream flow is adequately regulated by current Texas State law including Senate Bill 155, which states that no person may construct or maintain a structure on land owned by the State of Texas without a permit. The Brazos River bed is owned by the State of Texas.

*Our Response:* We recognize that Texas State law may regulate aspects of the construction of impoundments in the Brazos River. However, as discussed in the *Final Listing Status Determination* (below), this law does not remove the threats to the species caused by existing impoundments. Further, this law does not remove the possibility of future impoundments causing further loss of unfragmented habitat.

*(14) Comment:* The Service should not base part of the listing rule on the unproven science surrounding climate change uncertainty in applying climate change models at the local scale.

*Our Response:* The Service considered numerous scientific data sources as cited in our SSA Report pertaining to climate change. The best available scientific information shows unequivocally that the Earth's climate is currently in a period of unusually rapid change, the impacts of that change are already occurring (National Fish, Wildlife, and Plants 2012, p. 9), and the region is likely to experience warmer weather, which will further strain water resources through increased water use, evaporation, and evapotranspiration.

Projections of climate change globally and for broad regions through the 21<sup>st</sup> century are based on the results of modeling efforts using state-of-the-art Atmosphere-Ocean General Circulation Models and various greenhouse gas emissions scenarios (Meehl *et al.* 2007, p. 753; Randall *et al.* 2007, pp. 596–599). However, the Service

recognizes that the current climate change models are not always downscaled to a local level. Despite improvements in climate change science, climate change models still have difficulties with certain predictive capabilities. These difficulties are more pronounced at smaller spatial scales and longer time scales. Model accuracy is limited by important small-scale processes that cannot be represented explicitly in models and so must be included in approximate form as they interact with larger-scale features. This is partly due to limitations in computing power, but also results from limitations in scientific understanding or in the availability of detailed observations of some physical processes. Consequently, models continue to display a range of outcomes in response to specified initial conditions and forcing scenarios. Despite such uncertainties, models predict climate warming under greenhouse gas increases (Meehl *et al.* 2007, p. 762; Prinn *et al.* 2011, p. 527), which is likely to worsen future drought conditions in the upper Brazos River.

Drought conditions negatively impact sharpnose shiners and smallmouth shiners by reducing the availability and flow rate of river water required to survive and reproduce. The frequency of spawning seasons not meeting the estimated minimum mean summer discharge requirements to support sharpnose and smallmouth shiner growth appears to be increasing (Service 2014, p. 42). With increasing drought, there is a projected decrease in surface runoff up to 10 percent by the mid-21<sup>st</sup> century (Mace and Wade 2008, p. 656; Karl *et al.* 2009, p. 45). As the intensity and frequency of spawning season droughts increase and river flows decrease, shiner survival and reproduction will be reduced. The

SSA Report and listing rules have been revised to more clearly recognize the uncertainty in applying climate change models to the local scale of the upper Brazos River basin.

*(15) Comment:* The Service received multiple requests for additional public hearings. Requests contended that the Service provided inadequate notification, that having a hearing for the proposed listing rule and proposed critical habitat rule at the same time did not follow the requirements outlined in the Act, and that the meeting was not located close to proposed critical habitat.

*Our Response:* Section 4(b)(5) of the Act states that the Service shall promptly hold one public hearing on the proposed regulation if any person files a request for such a hearing within 45 days after the date of the publication of the general notices. The Service did receive a request for a public hearing, and the Service held a public hearing on September 4, 2013, in Abilene, Texas.

The notification of the public hearing was clearly stated in both the proposed rule to list the sharpnose shiner and smalleye shiner as endangered and in the proposed rule to designate critical habitat for these species on August 6, 2013 (78 FR 47582; 78 FR 47612). A notification of the public hearing was also published in the Lubbock Avalanche on Sunday, August 18<sup>th</sup>; the Abilene Reporter News on Sunday, August 18<sup>th</sup>; the Waco Tribune Herald on Sunday, August 25<sup>th</sup>; and the Baylor County Banner from August 15<sup>th</sup> through the 22<sup>nd</sup>. These newspapers have relatively large distributions with

one located immediately upstream of designated critical habitat, one downstream of designated critical habitat, and two having distributions in or around designated critical habitat.

The Service mailed letters, which included information regarding the public hearing to over 100 recipients, shortly after the proposed rules published on August 6, 2013. Letter recipients included Federal agencies, State agencies, city offices, county courthouses, and numerous nongovernmental organizations. Service staff also contacted approximately 56 local media outlets and posted a news release containing the public hearing announcement on the Arlington, Texas, Ecological Services Field Office and Service's Southwest Region webpages.

The Act does not require the Service to hold multiple public hearings in multiple locations. The Act also does not indicate a necessary proximity to proposed critical habitat within which to hold a public hearing. The Service chose Abilene, Texas, because it is the largest city centrally located to the proposed designated critical habitat that contained a venue of appropriate size and with reasonable access by major roads and highways. The Service also held the public hearing in the evening to provide adequate time for attendees to travel after normal work hours. To provide additional opportunity for the public to provide comments, the Service reopened the comment period on the proposed rule to designate critical habitat for these species for 30 days to coincide with

the availability of the Draft Economic Analysis of the Proposed Designation of Critical Habitat for Sharpnose and Smalleye Shiners on March 4, 2014 (79 FR 12138).

*(16) Comment:* There have been droughts of this magnitude before, and the sharpnose and smalleye shiners continue to exist.

*Our Response:* According to available U.S. Geological Survey flow station data, the worst 1-year drought recorded in the upper Brazos River basin occurred in 2011, and the best available commercial and scientific data suggest the trend of increasing drought intensity and duration is likely to worsen in the future. Prior to U.S. Geological Survey flow monitoring and construction of Brazos River impoundments, droughts of equal intensity may have occurred, but the sharpnose and smalleye shiner were likely capable of surviving because cumulative threats, such as river fragmentation from constructed impoundments, were not present at that time. Threats to the species do not necessarily act individually but act cumulatively. These cumulative, negative impacts exceed those that would be expected from each threat individually.

Due to drought conditions and lack of streamflow in 2011 there was no observed recruitment of juvenile sharpnose or smalleye shiners during sampling efforts of the upper Brazos River during the spawning season of 2011 (Wilde 2012b, pers. comm.). Given these species at most survive for two reproductive seasons, severe drought conditions during consecutive spawning seasons may result in local extirpations or



complete extinction unless recovery actions are implemented. The summer of 2011 provided an example of what happens to these species when water availability is reduced by in-channel impoundments (water withheld for municipal use in the upper Brazos River basin), continued groundwater depletion (particularly for agricultural use in the upper Brazos River basin), saltcedar encroachment (particularly in the downstream portion of the upper Brazos River), and severe drought (2011 being Texas' worst 1-year drought on record). When these factors acted together, the upper Brazos River dried up over much of its length, and a complete lack of reproduction and recruitment was observed for these species. The impoundment of Possum Kingdom Lake also exacerbated the impact of flow regime alteration to these species by blocking the downstream movement of these fish to areas with suitable conditions for survival and reproduction, as may have historically occurred during extreme circumstances. Negative effects were likely also exacerbated by increased predation pressure on adult sharpnose and smalleye shiners seeking refuge in Possum Kingdom Lake by larger, lentic-adapted piscivorous fish species.

*(17) Comment:* Large landowners often cannot participate in cost-share programs (such as those for saltcedar control to benefit sharpnose and smalleye shiners) because of earned income. If the government mandates saltcedar control, it will come out of their pockets.

*Our Response:* The Service does not have authority to mandate what private landowners do with their land and cannot require landowners to engage in conservation activities, such as saltcedar control. Many cost-share programs consider positive impacts to threatened or endangered species when deciding projects to fund; therefore, landowners who are eligible for cost-share programs and would like to implement saltcedar control on land of the upper Brazos River basin may be more likely to receive cost-share.

*(18) Comment:* The public should know who has been chosen as peer reviewers or have input in choosing who peer reviews the listing rules and species status assessment.

*Our Response:* Peer reviewer names are made available to the public when their comments are officially submitted and posted on [www.regulations.gov](http://www.regulations.gov) as with any public commenter. Release of peer reviewer names prior to the submission of their review can subject them to public and political pressures. The Service relies on peer review to provide a thorough and expert opinion on the science used to make listing decisions and it should be guarded against outside influences that could affect the subjectivity of that review.

In selecting peer reviewers we followed the guidelines for Federal agencies spelled out in the Office of Management and Budget (OMB) "Final Information Quality

Bulletin for Peer Review," released December 16, 2004, and the Service's "Information Quality Guidelines and Peer Review", revised June 2012. Part of the peer review process is to provide information online about how each peer review is to be conducted. Prior to publishing the proposed listing and critical habitat rule for the shiners, we posted a peer review plan on our website at <http://www.fws.gov/southwest/science/peerreview.html>, which included information about the process and criteria used for selecting peer reviewers.

*(19) Comment:* The effluent from the City of Lubbock has raised the alkali level of the Brazos River such that it is borderline for human consumption.

*Our Response:* The Service is unaware of any data linking alkalinity levels to City of Lubbock effluent, nor is it aware of any data suggesting the alkalinity of the upper Brazos River basin is above normal levels. The commenter did not provide any citations or documentation to support this comment.

*(20) Comment:* The Service justifies the proposed rule, in part, by alleging a decline in population of the species without providing an estimate of historical or current population data. A review of historical surveys or population monitoring surveys could be implemented to determine population trends and relative distribution.

*Our Response:* The Service is using range restriction and intensity of threats to the species as indicators of species status. Population size and fish abundance are not perfect measures of population health for the sharpnose and smalleye shiner because numbers of fish vary widely with changing habitat conditions and because ongoing threats to the species have the ability to cause extirpation and extinction regardless of population size. Recent and ongoing survey efforts are adding to the body of knowledge for these fish. In their occupied range, both species are distributed throughout the upper Brazos River depending on habitat conditions (available surface water within tolerable physiological limits) at the time of collection. See our response to comment (11) above for additional information.

*(21) Comment:* The Service fails to support the designated historical and current range of either species. The Service does not present findings for a state-wide survey or comprehensive presence or absence survey within their historical ranges.

*Our Response:* The historical and current ranges of sharpnose and smalleye shiners are based on peer-reviewed published accounts of these species, survey results, and analysis of museum specimens collected and geographically digitized by ichthyologists. While there is not a State-wide or comprehensive survey effort within the historical range, the Service must use the best scientific and commercial data available. For the purposes of determining historical and current ranges, these sources represent the best available commercial and scientific data.

*(22) Comment:* The Service does not consider the possibility of future flood events or bait fish introductions that could result in transferring sharpnose or smalleye shiners from the upper Brazos River to the Colorado River or areas outside the current or native range.

*Our Response:* The Brazos and Colorado Rivers contain several impoundments that serve as water storage and flood control devices. Also, sharpnose and smalleye shiners are considered extirpated or functionally extirpated in the lower Brazos River where such a connection with the Colorado River would occur during a flood event. The occupied segments of the upper Brazos River basin are generally under such low-flow conditions that the basin is unlikely to experience a flood of sufficient magnitude to connect it to another river basin. Based on this information, it appears unlikely that flooding would transport shiners to the Colorado River or outside their current range.

The Service recognizes in the SSA Report that these species could be transferred as bait fish. However, a river where a fish may be transferred would need suitable habitat to establish and maintain a population, and there are limited rivers in the area that provide suitable habitat. Further, it is likely that a suitable number of individuals would need to be transferred in order to survive and establish a population. However, if such a transfer would occur, these species would be protected wherever they are found due to listing under the Act.

*(23) Comment:* The Service does not address the viability or importance of historical populations outside of the Brazos River basin.

*Our Response:* The natural historical distribution of the sharpnose shiner is considered to include the Brazos, Colorado, and Wichita River basins. However, the species is now extirpated from the Colorado and Wichita Rivers, as well as the middle and lower sections of the Brazos River. Consequently, there are no populations outside of the upper segment of the Brazos River, and, therefore, no additional populations exist to contribute to the viability of the species. In the SSA Report, the Service provides an analysis of the historical contribution of non-Brazos River populations to both shiner species as a whole in the section “2. Rangewide Needs” and clearly indicates our position on the current status of those populations.

*(24) Comment:* The Service provides no evidence that sharpnose shiners naturally occurred in the Colorado and Wichita River basins. Without sufficient evidence of a larger historical range, the Service cannot conclude that there has been a range reduction for this species.

*Our Response:* The natural occurrence of sharpnose shiners in the Colorado and Wichita Rivers is based on published literature, museum specimens, flood data, and expert opinion. These sources are the best available scientific and commercial data and

provide adequate support of the determination that the sharpnose shiner is native to these Rivers. Even discounting the Colorado and Wichita River populations, the sharpnose shiner would be experiencing a range reduction of more than 50 percent due primarily to fragmentation and alteration of flows within the middle Brazos River by impoundments. See our response to comment (11) above for additional information.

*(25) Comment:* Genetic analyses could better elucidate the status of the sharpnose and smalleye shiners of the upper Brazos River basin.

*Our Response:* The Service agrees that genetic studies for these two species would be useful; however, the Service must use the best available scientific and commercial data at the time of listing. The Service is in the process of funding a study through section 6 of the Act to determine the genetic structure of the remaining populations of both species.

*(26) Comment:* Studies focused on determining the minimum flow rate, duration, and critical river sections for successful spawning would provide useful information to manage short-term viability and long-term survivability for these shiner species.

*Our Response:* The Service agrees that additional studies on the minimum flow rate required to keep the semi-buoyant life-history stages of these species afloat would be useful. However, the Service has used the best scientific and commercial data available.

Based on current life-history information, population dynamics modeling estimates a mean summer water discharge of approximately  $2.61 \text{ m}^3 \text{ s}^{-1}$  (92 cfs) is necessary to sustain populations of sharpnose shiners (Durham 2007, p. 110), while a higher mean discharge of approximately  $6.43 \text{ m}^3 \text{ s}^{-1}$  (227 cfs) is necessary for smalleye shiners (Durham and Wilde 2009b, p. 670). See section “**2.C.2. Streamflow Requirements**” of the SSA Report for additional information.

*(27) Comment:* Inclusion of stream gauge data from the 1950s could be useful as a partial indicator of how the two species respond to extended drought.

*Our Response:* The Service has added stream gauge data going back to 1940 in its analysis of drought conditions in the upper Brazos River basin and has also added an additional stream gauge site. See section “**3.D. Drought**” of the SSA Report for further discussion.

*(28) Comment:* The listing package and SSA Report do not provide sufficient, conclusive evidence connecting stated threats to a decline in species abundance or a reduction in range, including the effects of impoundment on river fragmentation. Neither the listing package nor SSA Report demonstrates the cumulative effects of threats.

*Our Response:* The **CAUSES AND EFFECTS THREAT ANALYSES** in Chapter 3 of the SSA Report discusses how the threats negatively affect sharpnose and



smalleye shiners. The SSA Report also includes a section on cumulative effects (“**K. Cumulative Effects**”). Further, the SSA Report has been peer-reviewed by experts in the field of ichthyology and aquatic ecology, and they found the SSA Report to be a scientifically sound document.

*(29) Comment:* Neither the listing package nor SSA Report demonstrate how stream reach lengths of at least 275 km (171 mi) are necessary for the continued existence of either species.

*Our Response:* Section “**2.C.3 Stream Reach Length Requirements**” of the SSA Report provides a complete analysis and justification for the estimated 275-km (171-mi) requirement based on the best available scientific and commercial data. As stated in the SSA Report, the Service recognizes that the necessary stream length requirements may vary with flow rates, water temperature, and channel morphology, but the 275 km (171 mi) is based on modeling population status and reach length, which indicate extirpation of eight different Great Plains broadcast-spawning minnow species occurred in river fragments less than 115 km (71 mi; Perkin *et al.* 2010, p. 7) and that no extirpations were recorded in reaches greater than 275 km (171 mi).

*(30) Comment:* The Service has not made any of the scientific studies or materials upon which it relied to prepare the SSA Report or rulemaking documents available online.

*Our Response:* Comments and materials received, as well as supporting documentation used in the preparation of this rule, are available for public inspection, by appointment, during normal business hours at Arlington, Texas, Ecological Services Field Office, (see **ADDRESSES**). A complete literature cited is included within the SSA Report.

*(31) Comment:* The Service failed to properly analyze the species under the Act's five listing criteria: (1) The present or threatened destruction, modification, or curtailment of a species' habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms; and (5) other natural or man-made factors affecting the species' continued existence.

*Our Response:* Under section 4(a)(1) of the Act, the "Secretary shall...determine whether any species is an endangered species or a threatened species because of any of the following factors: (A) the present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or man-made factors affecting its continued existence." Neither the Act nor its implementing regulations direct the Service to evaluate the five factors in a particular format. The Service may present its evaluation

of information under the five factors by discussing all of the information relevant to each factor and providing a factor-specific conclusion before moving to the next factor (an “outline” format). For this rule, we presented this information in a different format that we believe leads to greater clarity in our understanding of the science, its uncertainties, and the application of our statutory framework to that science. Therefore, while the presentation of information in this rule differs from past practice, it differs in format only. We have evaluated the same body of information that we would have evaluated under the five factors “outline” format, we are applying the same information standard, and we are applying the same statutory framework in reaching our conclusions. Our determination for the sharpnose and smallmouth shiners ties each threat to one of the five factors (see **Determination** section).

*(32) Comment:* The Service failed to properly consider impacts from the inadequacy of existing regulatory mechanisms on stream flow.

*Our Response:* The “**B. Groundwater Withdrawal**” and “**A. Impoundments**” sections of the SSA Report discusses impacts on stream flow in detail. The Service has considered the existing State regulatory mechanisms, but these efforts do not ameliorate the threats to these species to the point that the species do not meet the definition of endangered.

*(33) Comment:* The Service failed to properly consider impacts from conservation measures associated with saltcedar control and a captive propagation and release program.

*Our Response:* The Service recognizes several ongoing saltcedar control projects including the Texas Agrilife Extension Saltcedar Biological Control Implementation Program, the U.S. Department of Agriculture Natural Resources Conservation Service's saltcedar cost-share control program, the Brazos River Authority's saltcedar control program, and the Service's saltcedar cost-share programs. However, participation in these programs is mostly voluntary, and even, when implemented, these programs have not been fully successful in eradicating saltcedar from the upper Brazos River basin.

The Texas Parks and Wildlife Department and Texas Tech University's release of fish into the lower Brazos River was a response to intense drought during the summer of 2011 and is not part of a formal reintroduction plan. While Texas Tech University maintains a small stock of sharpnose and smalleye shiners in the laboratory, they are primarily used for research purposes. They do not have a captive propagation program in place to breed and release fish into the wild on a large-scale basis. Based on the best scientific and commercial data available, it is presumed that the fish released into the lower Brazos River are either extirpated or functionally extirpated. The Service has considered these conservation measures, but these efforts do not ameliorate the threats to these species to the point that the species do not meet the definition of endangered.

*(34) Comment:* The listing of a species under the Act based principally or exclusively on climate change impacts necessarily involves policy questions that are assigned by the Constitution to Congress. The Act is not an appropriate mechanism to regulate climate change and greenhouse gas emissions.

*Our Response:* Our decision to list the species was based on river fragmentation, alterations of the natural flow regime, water quality degradation, and commercial bait harvesting; and not principally on climate change. We acknowledged in our rule that the projected impacts of climate change could exacerbate these threats that the species are facing in the future.

Furthermore, we are not attempting, through this rule, to use the Act to regulate climate change or greenhouse gases. We are making a decision as to whether the species meet the definition of endangered or threatened. To do so, the Act requires the Service to evaluate five factors, individually and in combination, including natural or man-made factors that are affecting the species' continued existence. This necessarily includes assessing potential impacts to a species or its habitat caused by global climate change.

*(35) Comment:* The Service has not thoroughly reviewed the local groundwater conservation districts' rights and responsibilities as dictated by Chapter 36 of the Texas

Water Code. Local districts can help alleviate the groundwater issues identified by the Service.

*Our Response:* Local groundwater conservation districts provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater. While many actions that the conservation districts enforce likely reduce groundwater consumption, these actions are not entirely consistent with the protection of surface water flows for sharpnose and smallmouth shiners. Section 36.103 of the Texas Water Code permits groundwater conservation districts to erect dams; drain lakes, draws, depressions, and creeks; and install pumps to recharge groundwater reservoirs. The protection of groundwater supplies at the expense of damming and depleting surface water would be detrimental to these species. Insofar as groundwater conservation districts reduce the number of wells by land parcel size and support general water conservation measures, they are benefiting the sharpnose and smallmouth shiners and the upper Brazos River basin ecosystem in general. However, groundwater conservation districts do not explicitly conserve groundwater to support surface water flows to maintain a healthy riverine environment for fish and other aquatic species. Conservation districts also do not cover all areas of the upper Brazos River basin. Further, the Texas State Water Plan estimates increased groundwater withdrawals in the future. These efforts do not ameliorate the threats to sharpnose and smallmouth shiners or their habitat to the point that the species do not meet the definition of endangered.

*(36) Comment:* Why are smalleye and sharpnose shiners not listed as endangered in the Clear Fork of the Brazos River?

*Our Response:* We are listing the shiners wherever they are found. However, the best available scientific and commercial information does not indicate that the sharpnose and smalleye shiners have ever been collected from the Clear Fork of the Brazos River; therefore, the Service has no basis to assume they once existed there historically or exist there currently. The Donnell Mill Dam on the Clear Fork of the Brazos River located approximately 21.5 km (13.3 mi) upstream of its confluence with the Brazos River mainstem has acted as a fish migration barrier since the late 1870s and may be partially responsible for the lack of records of these species from this river.

*(37) Comment:* After the devastating drought of 2011 in the upper Brazos River basin, smalleye and sharpnose shiners recovered in 2012 and survived without the Service's help.

*Our Response:* Rainfall, and hence surface water flows, was greater in 2012 than during 2011. If a similar or worse drought had occurred in 2012 these fish may now be extinct. During 2011, the spring-fed isolated pools in the upper Brazos River and Possum Kingdom Lake provided refuge for adult sharpnose and smalleye shiners. Surviving adults were able to later recolonize the river channel and reproduce when river water levels rose. Given their short lifespan and restricted range, stressors that persist for two

or more reproductive seasons (such as a severe drought) severely limit these species' current viability, placing them at a high risk of extinction now.

*(38) Comment:* If the proposed rule would require fencing the river to keep livestock away, it would impose a financial burden on landowners.

*Our Response:* The best available scientific and commercial information does not indicate that cattle pose a threat to sharpnose or smallmouth shiners, and anecdotal data indicate that cattle may be beneficial in maintaining a wide, shallow river channel. See our response to comments (4) and (17) above for additional information.

### **Summary of Changes from Proposed Rule**

Only minor changes and clarifications were made to the listing rule based on comments received. The SSA Report was updated, clarified, and expanded based on several peer review and public comments. These minor changes did not alter our previous assessment of these species from the proposed rule to the final rule.

### **Determination**

*Standard for Review*



Section 4 of the Act (16 U.S.C. 1533), and its implementing regulations at 50 CFR part 424, set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, the Secretary is to make threatened or endangered determinations required by subsection 4(a)(1) solely on the basis of the best scientific and commercial data available to her after conducting a review of the status of the species and after taking into account conservation efforts by States or foreign nations. The standards for determining whether a species is threatened or endangered are provided in section 3 of the Act. An endangered species is any species that is “in danger of extinction throughout all or a significant portion of its range.” A threatened species is any species that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” Per section 4(a)(1) of the Act, in reviewing the status of the species to determine if it meets the definitions of threatened or endangered, we determine whether any species is an endangered species or a threatened species because of any of the following five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; and (E) other natural or manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination.

Until recently, the Service has presented its evaluation of information under the five listing factors in an outline format, discussing all of the information relevant to any given factor and providing a factor-specific conclusion before moving to the next factor. However, the Act does not require findings under each of the factors, only an overall determination as to status (e.g., threatened, endangered, not warranted). Ongoing efforts to improve the efficiency and efficacy of the Service's implementation of the Act have led us to present this information in a different format that we believe leads to greater clarity in our understanding of the science, its uncertainties, and the application of our statutory framework to that science. Therefore, while the presentation of information in this rule differs from past practice, it differs in format only. We have evaluated the same body of information that we would have evaluated under the five listing factors outline format, we are applying the same information standard, and we are applying the same statutory framework in reaching our conclusions.

#### *Final Listing Status Determination*

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the sharpnose shiner and smalleye shiner. Based on our review of the best available scientific and commercial information, we conclude that the sharpnose shiner and smalleye shiner are currently in danger of extinction throughout all of their range and, therefore, each meets the definition of an endangered species. This finding, explained below, is based on our conclusions

that these species exhibit low viability, as characterized by not having the resiliency to overcome persistent threats and insufficient population redundancy to overcome catastrophic events. We found the sharpnose shiner and smalleye shiner are at an elevated risk of extinction now and no data indicate that the situation will improve without significant conservation intervention. We, therefore, find that the sharpnose shiner and smalleye shiner warrant endangered species listing status determination.

On the basis of our biological review documented in the March 2014 SSA Report, we found that the sharpnose shiner and smalleye shiner are vulnerable to extinction due to their reduced ranges and their highly specific reproductive strategies. These species are currently restricted to the upper Brazos River and its major tributaries, which represents a greater than 70 percent reduction in range for the sharpnose shiner and a greater than 50 percent range reduction for the smalleye shiner. The occupied river segments of the upper Brazos River currently retain the necessary length (greater than 275 km (171 mi)) to support successful broadcast-spawning reproduction in these species. However, these river segments have naturally occurring periods of low flow, periods completely lacking flow, and periods of complete drying (Factor A)—often during the dry summer months, which is also when these species spawn. The eggs and larvae of these species require flowing water of sufficient velocity to keep their eggs and larvae afloat and alive. During periods of insufficient river flow, reproduction is not successful and no young are produced (Factor A).

Our review found the primary factors leading to a high risk of extinction for these fishes include habitat loss and modification due to river fragmentation and decreased river flow, resulting mainly from reservoir impoundments (Factor A). Drought, exacerbated by climate change (Factor E), and groundwater withdrawals also act as sources to reduce stream flows and modify stream habitats (Factor A). Fragmentation due to reservoir construction has resulted in a substantially reduced range with only one isolated population of each species in the upper Brazos River. With only one isolated population remaining, these species have no redundancy, reduced resiliency due to the inability to disperse downstream, and limited representation. This situation puts the species in danger of extinction from only one adverse event (such as insufficient flow rates for 2 consecutive years). Secondary causes of habitat modifications include water quality degradation and saltcedar encroachment that alters stream channels (Factor A). As population sizes decrease, localized concerns, such as commercial harvesting of individuals, also increases the risk of extinction (Factors B).

We evaluated whether the sharpnose shiner and smalleye shiner are in danger of extinction now (i.e., an endangered species) or are likely to become in danger of extinction in the foreseeable future (i.e., a threatened species). The foreseeable future refers to the extent to which the Secretary can reasonably rely on predictions about the future in making determinations about the conservation status of the species. A key statutory difference between an endangered species and a threatened species is the timing of when a species may be in danger of extinction, either now (endangered species) or in

the foreseeable future (threatened species). Because of the fact-specific nature of listing determinations, there is no single metric for determining if a species is presently “in danger of extinction.” In the case of the sharpnose shiner and smalleye shiner, the best available information indicates the severe range reduction and isolation of these species to a single population in the upper Brazos River basin places these species in danger of extinction now, and the situation is exacerbated by the ongoing and intensifying effects of river fragmentation (Factor A), drought (Factor A), saltcedar encroachment (Factor A), water quality degradation (Factor A), and commercial bait harvesting (Factor B). The current threats affecting these species are expected to continue (or even increase without substantial conservation efforts), causing both species to be in danger of extinction now. Therefore, because these species have been reduced to less than half of their previously occupied range and because both species are restricted to a single, non-resilient population at a high risk of extinction from a variety of unabated threats, we find both species are in danger of extinction now and meet the definition of an endangered species (i.e., in danger of extinction), in accordance with sections 3(6) and 4(a)(1) of the Act.

Under the Act and our implementing regulations, a species may warrant listing if it is threatened or endangered throughout all or a significant portion of its range. The threats to the survival of these species occur throughout their range and are not restricted to any particular significant portion of their range. Accordingly, our assessments and determinations apply to these species throughout their entire range.

In conclusion, as described above, after a review of the best available scientific and commercial information as it relates to the status of the species and the five listing factors, we find the sharpnose shiner and smalleye shiner are in danger of extinction now. Therefore, we are listing the sharpnose shiner and smalleye shiner as endangered species in accordance with section 3(6) of the Act. We find that a threatened species status is not appropriate for the sharpnose or smalleye shiner because the overall risk of extinction is high at this time and the existing populations are not sufficiently resilient to support viable populations.

#### **Available Conservation Measures**

Regulations at 50 CFR 424.18 require final rules to include a description of conservation measures available under the rule. Following is an explanation of the measures that may be implemented for the conservation of the shiners under this final rule.

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness and conservation by Federal, State, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and requires that recovery actions be carried out for all listed species. The protection

measures required of Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act requires the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning includes the development of a recovery outline shortly after a species is listed, preparation of a draft and final recovery plan, and revisions to the plan as significant new information becomes available. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. The recovery plan identifies site-specific management actions that will achieve recovery of the species, measurable criteria that determine when a species may be downlisted or delisted, and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery

teams (comprising species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website (<http://www.fws.gov/endangered>), or from our Arlington, Texas, Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, tribal, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may not occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

Because these species are listed as endangered, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of Texas would be eligible for Federal funds to implement management actions that promote the protection and recovery of the sharpnose and smalleye shiners. Information



on our grant programs that are available to aid species recovery can be found at:

*<http://www.fws.gov/grants>.*

Please let us know if you are interested in participating in recovery efforts for these species. Additionally, we invite you to submit any new information on these species whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include but are not limited to: permitting of interbasin water transfers, permitting of large groundwater withdrawal projects, permitting of in-channel mining and dredging, issuance of section 404 Clean Water Act (33 U.S.C. 1251 *et seq.*) permits by the U.S. Army Corps of Engineers, and construction and maintenance of roads or highways by the Federal Highway Administration.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. The prohibitions, codified at 50 CFR 17.21 for endangered wildlife, in part, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these), import, export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered and threatened wildlife species under certain circumstances. Regulations governing permits are codified at 50 CFR 17.22 for endangered species, and at 17.32 for threatened species. With regard to endangered wildlife, a permit must be issued for the

following purposes: for scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities.

Our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), is to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a proposed listing on proposed and ongoing activities within the range of species proposed for listing. The following activities could potentially result in a violation of section 9 of the Act; this list is not comprehensive:

(1) Unauthorized collecting, handling, possessing, selling, in interstate commerce, delivering, carrying, or transporting of the species, including import or export across State lines and international boundaries, except for properly documented antique specimens of these taxa at least 100 years old, as defined by section 10(h)(1) of the Act.

(2) Unauthorized destruction or alteration of sharpnose and smalleye shiner habitats (e.g., unpermitted in-stream dredging, impoundment, or construction; water diversion or withdrawal; channelization; discharge of fill material) that impairs essential behaviors such as breeding, feeding, or sheltering, or results in killing or injuring sharpnose or smalleye shiners. Such activities could include, but are not limited to, the

destruction of upland riparian areas in a manner that negatively impacts the river ecosystem.

(3) Capture, survey, or collection of specimens of these taxa without a permit from the Service under section 10(a)(1)(A) of the Act.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Arlington, Texas, Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

### **Required Determinations**

#### *National Environmental Policy Act*

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), need not be prepared in connection with regulations pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

#### *Government-to-Government Relationship with Tribes*

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes. There are no tribes within the current or historical range of the species.

### **References Cited**

A complete list of all references cited in this rule is available on the Internet at <http://www.regulations.gov> within the SSA Report (Service 2014, Literature Cited) or upon request from the Arlington, Texas, Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

### **Author(s)**

The primary authors of this document are the staff members of the Arlington, Texas, Ecological Services Field Office (see **ADDRESSES**).

### **List of Subjects in 50 CFR Part 17**

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

### **Regulation Promulgation**

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as follows:

### **PART 17—[AMENDED]**

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; 4201–4245; unless otherwise noted.

2. Amend §17.11(h) by adding the following entries to the List of Endangered and Threatened Wildlife in alphabetical order under FISHES:

**§ 17.11 Endangered and threatened wildlife.**

\* \* \* \* \*

(h) \* \* \*

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
* * * * *							
Fishes							
* * * * *							
Shiner, sharpnose	<i>Notropis oxyrhynchus</i>	U.S.A. (TX)	Entire	E	840	17.95(e)	NA
Shiner, smalleye	<i>Notropis buccula</i>	U.S.A. (TX)	Entire	E	840	17.95(e)	NA
* * * * *							



Dated: July 18, 2014

Signed: Betsy Hildebrandt

Acting Director, U.S. Fish and Wildlife Service

**Billing Code 4310-55**